NPRA Testimony Summary
Subcommittee on Energy & Air Quality
"Alternative Fuels: Current Status, Proposals for
New Standards, and Related Infrastructure Issues"
Hearing on May 8, 2007

NPRA believes it imperative that Congress, the Administration, and all stakeholders work in a determined, but nevertheless cooperative effort to develop policies that achieve the desired results of a balanced fuel supply and demand ratio that affords necessary environmental improvements. At the same time, these policies must ensure continued economic growth and security. These goals are not and can not be deemed mutually exclusive.

The Administration's proposal to increase the nation's consumption of renewable fuels in the transportation sector would not appreciably reduce the nation's dependence on foreign oil and could have an effect on refining capacity expansion plans. A fundamental policy question regarding the efficacy of exporting domestic supplies of transportation fuels under the guise of reducing domestic consumption of that same fuel under a continuing supply/demand imbalance must be addressed. Imported oil may very well have geo-political security concerns of its own, but transferring dependency on a commodity, such as corn production, that can be severely impacted by a number of uncontrollable events (drought, storms, heat waves, etc.) creates a new dimension of uncertainty to energy supply reliability. There are also several infrastructure challenges to meeting the Administration's target.

Written Statement of the
National Petrochemical & Refiners Association

delivered by
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concerning
Alternative Fuels: Current Status, Proposals for New Standards, and Related Infrastructure Issues

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Chairman Boucher, Ranking Member Hastert, and members of the Energy and Air Quality Subcommittee, NPRA, the National Petrochemical & Refiners Association, appreciates the opportunity to present its views on Alternative Fuels: Current Status, Proposals for New Standards, and Related Infrastructure Issues. I am Charles Drevna, NPRA's Executive Vice President. Our testimony today will concentrate on how these three distinct, but nevertheless directly related factors, have impacted/will directly impact the current and projected gasoline supply and the specifications which refiners have been or may be obligated to achieve. As you know, NPRA is a national trade association with 450 members, including those who own or operate virtually all U.S. refining capacity, as well as most of the nation's petrochemical manufacturers with processes similar to those of refiners.

INTRODUCTION

Continued uncertainty and instability in the motor fuel market is a concern that is shared by the domestic refining industry. NPRA believes it imperative that Congress, the Administration, and all stakeholders work in a determined, but nevertheless cooperative effort to develop policies that achieve the desired results of a balanced fuel supply and demand ratio that affords necessary environmental improvements. At the same time, these policies must ensure continued economic growth and security. These goals are not and can not be deemed mutually exclusive. NPRA therefore pledges to do our part in developing a fuller understanding of all factors surrounding these issues.

THE RENEWABLE FUELS STANDARDS OF EPACT '05

The Energy Policy Act of 2005 (Public Law 109-58) includes a renewable content requirement for motor vehicle fuels, the Renewable Fuel Standard (RFS) provision (see section 1501). The RFS called for 4 billion gallons of ethanol to be blended into gasoline in 2006. The amount of ethanol used is scheduled to increase each year through 2012, where it is targeted to reach 7.5 billion gallons.

By February 2007, ethanol consumption was running at a rate of nearly 400,000 barrels per day, equivalent to an annual consumption rate of 6.1 billion gallons. This rapid growth in demand for ethanol during the year (comprising approximately 4.3% of the gasoline pool in February 2007) reflects its established role as part of the transportation fuel supply mix.

Therefore, actual use patterns outpaced the EPACT '05 ethanol mandates. This success suggests that policymakers may have underestimated ethanol's inherent potential. This outcome could have provided the context for the President's and other proposal to greatly expand the government renewable fuels mandate to 35 billion gallons; growing ethanol consumption from current levels of 400,000 barrels per day to 2.28 million barrels per day—a 6-fold leap.

EPA has developed a reasonable framework for the RFS program

The RFS is administered by EPA and on April 10, 2007, EPA released comprehensive RFS standards. They were promulgated on May 1, 2007 (72 FR 23900). The regulatory program will begin on September 1, 2007. The Renewable Fuel Standard for 2007 is 4.02%. The RFS for 2008 will be announced by EPA in November 2007.

NPRA appreciates the constructive interaction with EPA during this rulemaking. I commend EPA for its facilitation of early engagement, cooperative efforts, and open discussion involving all stakeholders. NPRA believes that the final regulations are flexible, workable and enforceable. The Agency disagreed with NPRA on some provisions, but the final rules do provide a reasonable regulatory framework that is consistent with the legislative provisions in the 2005 energy bill.

NPRA has agreed to sponsor a workshop on May 10 where all stakeholders, i.e. obligated parties (refiners, blenders and importers), renewable fuel producers, and others will have the opportunity to discuss with the Agency all aspects of the rules. In addition, EPA is preparing a fairly detailed question and answer document to further inform stakeholders.

At this point, it is still too early to evaluate this program. However, NPRA believes that the implementation of the RFS program is off to a good start. It is worthy to note, however, that the refining industry will have, over the first two years of the program, surpassed the statutory minimums for blending of renewables. It is further anticipated that refiners will continue to exceed the minimum requirements over the next several years. We believe this affirms our stated position that mandates are unnecessary and that a fuel supply, transportation and distribution system based on free market principles should be the option of choice.

PROPOSALS TO VASTLY INCREASE THE CURRENT RFS

The Issue of Energy Security

The administration and many in Congress have rolled out several energy policy initiatives that would substantially expand the use of ethanol and other renewable fuels for the U.S. transportation sector. These actions are a direct reply, and viewed by its proponents as an effective policy response, to a domestic transportation fuel market that has experienced much volatility and uncertainty in recent years. The administration's proposal would increase the annual U.S. consumption of ethanol and related bio-fuels to 35 billion gallons by 2017. According to the Energy Policy Research Foundation, this proposal, when fully implemented and under a best-case scenario, would reduce petroleum imports by 1.5 million barrels per day. This number reflects the metric that if the 35 billion gallon per year goal were to be attained, it would by volume alone replace 2.25 million barrels of imported oil with domestically manufactured fuel. However, since ethanol contains only two-thirds the energy content of petroleum, the oil import savings would be a little as 1.5 million barrels per day. This would not appreciably alter the nation's dependence on foreign oil, which DOE forecasts to be nearly 13 million barrels per day in 2017.

For the U.S. gasoline pool, it is estimated that about 6 billion gallons of ethanol is both essential and complimentary to the domestic production of gasoline. Without these volumes of ethanol available for blending with gasoline, the domestic refining industry would likely have difficulty meeting consumer demands.

Refinery Capacity Expansion Projects

It should be clearly understood that requirements to substantially increase the volume of ethanol and other renewables will essentially supplant a significant portion of the need/desire for additional domestic refining capacity. Refiners must make investments today on what they believe to be the longer-term (10-15 years or more) outlook. The domestic refining industry is likely to look upon rapidly rising ethanol and other bio-fuels requirements in the coming years as adding significant more risk to investments in capacity expansions. As recently as 2006, the Department of Energy (DOE) forecast that domestic refiners were likely to add 1.5 million barrels per day of capacity between 2006-2010. Based upon perceptions of renewable market developments – developments being stoked by administration and congressional actions – current estimates suggest that expansion in the domestic refining is likely to be constrained well below 1 million barrels per day. These decisions are being re-visited in boardrooms across the refining sector as the anticipated surge in ethanol requirements/mandates in the coming years will pressure domestic, and undoubtedly some foreign refiners currently supply the U.S. market to postpone or cancel new investments in petroleum refining capability.

To illustrate the point further, the President's proposal which calls for use of 35 billion gallons per year of renewable fuels, primarily ethanol, also requires a 20% reduction in the use of gasoline by the same time. The Energy Information Administration projects that gasoline demand in 2017 will be 161 billion gallons. A 20% reduction of this figure would result in 129 billion gallons of gasoline. In 2006, U.S. production of gasoline was 136 billion gallons and net imports of finished gasoline equaled 7 billion gallons. Therefore, the target for gasoline use in 2017 is below today's U.S. production levels.

This would transform the U.S. from a net importer to a net exporter of gasoline. Meanwhile, demand for other petroleum-based fuels such as diesel is still expected to increase. If U.S. refiners expand capacity to meet rising demand for petroleum products other than gasoline, they will naturally produce more excess gasoline for export at the same time. A fundamental policy question regarding the efficacy of exporting domestic supplies of transportation fuels under the guise of reducing domestic consumption of that same fuel under a continuing supply/demand imbalance must be addressed.

Basic Economics

Existing law extends the 51-cent per gallon ethanol fuel blender tax credit (the equivalent of $21.42 per barrel of gasoline) through 2010. It is likely that Congress will extend this particular provision, as many facilities will be under severe financial stress absent the blender credit. The costs of this program to the U.S. Treasury are not trivial, however. Assuming that the blender credit remains in place, it will cost the federal government about $30 billion between 2007 and 2012. These are direct tax losses to the U. S. Treasury and do not include indirect cost to the U. S. consumer. During 2006, for example, indirect consumer costs from higher corn and other agricultural product prices impacted by increasing ethanol consumption amounted to about $5 billion, twice the cost of the tax credit itself to the U. S. Treasury.

Energy "Security" Trade-Offs

Other entities impacted by large increases in the price of corn directly related to the increased and increasing use of ethanol in the transportation fuel mix have or will have discussed their concerns with Congress. While NPRA shares their concerns, we do not portend to speak for them. It is important, however, to note the security concern regarding potential supply impacts from increased reliance upon corn production, which is subject to periodic disruptions from weather-related events. Imported oil may very well have geo-political security concerns of its own, but transferring dependency on a commodity that can be severely impacted by a number of uncontrollable events (drought,

storms, heat waves, etc.) creates a new dimension of uncertainty to energy supply reliability. To mitigate these impacts of these undesirable but likely events, undefined proposals of "off-ramps" have been offered. These off-ramps would, in theory, absolve obligated parties from compliance with statutory and implementing regulatory requirements in times of these episodic events. However, the obligated parties will have made the substantial investments required to comply with the renewable mandates on a going-forward basis. It could require substantive operational and process modifications in order to deliver a product containing less or no renewable content while still meeting all other applicable criteria. These modifications can not be done quickly and the impact on overall supply will be direct, thus resulting in the exact opposite goal of enhancing U.S. energy security.

INFRASTRUCTURE REQUIREMENTS/CONCERNS

Although ethanol has been used in U.S. motor fuel supply since the 1970's, various government efforts to promote its broader use have not gained traction until this decade. As previously discussed, enactment of EPACT '05 resulted in a mandate to blend increasing amounts of ethanol in gasoline—7.5 billion gallons by 2012. With the somewhat sudden phase-out of MTBE one year later, ethanol's role of a vital component of gasoline had been realized. In February 2007, ethanol realized an annual consumption rate of 6 billion gallons, far surpassing EPACT requirements and approaching the 2012 mandated levels.

This large scale and seemingly successful integration of ethanol into the motor fuel has been followed by new proposals that dwarf the existing requirements for blending of renewable fuels. These new proposals are expected to be met primarily throught the use of ethanol. Recent reports and discussion have indicated that there is general agreement that corn-based ethanol can only supply less than half of the 35 billion gallons per year of renewable production called for by the President's proposal. NPRA believes that the operative question should not be one of can corn supply nearly 15 billion gallons of ethanol for blending into gasoline, but rather should it? This volume, according to most

estimates, would require that approximately 44 per cent of the corn crop be dedicated to ethanol production. One must question whether this represents sound, sustainable energy policy in lieu of other considerations.

Further, it is unclear how a vehicle base that is currently unable to use even half this amount (35 billion gallons) could consume this much ethanol. In order to use all of the 35 billion gallons per year of ethanol production, far-reaching and rapid replacement of the 237 million vehicles now on the nation's roads with flexible fuel vehicles (FFV) would need to take place. This would further require that a large portion of the approximate 17.5 million vehicles sold annually must transition to FFV's very quickly if ethanol use is to grow to levels envisioned by these and other proposals.

There are also numerous other challenges that must be overcome before this much ethanol could be integrated into the U.S. transportation fuel supply. Among them is the lack of a robust transport system to provide universal distribution, the availability of 13 billion bushels of corn to manufacture this amount of ethanol, and a much-needed but yet unrealized technology breakthrough to manufacture ethanol from cellulosic plant material.

Ethanol Versus Petroleum-Based Fuel

Looking at some of these matters in more detail, ethanol had to overcome a number of difficulties in order to gain its present position in the fuel supply chain. To some extent, these challenges have not been overcome and will be exacerbated if calls for the massive increase in its use are implemented.

Ethanol cannot be transported through mixed-use pipeline systems or other traditional infrastructure. Ethanol is not distributed through pipelines because of problems with water contamination and corrosion. Due to its water solubility, ethanol drops out of fuel during shipment through pipelines and results in noncompliant or substandard fuel. Ethanol's corrosive properties degrade the strength of pipeline valves and joints. For

these reasons, ethanol must be blended with gasoline or the appropriate blendstock at the terminal, as near to the final consumption point as possible. This makes the delivery and distribution of ethanol expensive because it requires more expensive transportation modes, like truck, rail car, barge or ship. Therefore, any significant increase in the production of ethanol will result in more stress on the distribution system. Because ethanol is blended with gasoline at terminals, these facilities must either invest in new ethanol storage tank and blending equipment or dedicate existing storage tanks, thereby reducing the quantity and diversity of on-hand inventory.

Therefore, most ethanol is transported by truck or railcar at costs ranging up to 15 cents per gallon according to estimates of the Energy Policy Research Foundation. These costs compare to gasoline where transportation costs through existing infrastructure is a few cents per gallon. About 80% of ethanol is produced in five mid-western states. As a consequence of high transport costs and transport that is limited in geographic scope, ethanol is not available in all parts of the nation.

When ethanol's role in the gasoline pool exceeds the amount of octane booster and oxygenate needed by fuel blenders, it becomes a direct competitor to gasoline and must be evaluated on the basis of energy content. Ethanol contains one-third less energy per unit of volume (76,000 Btu/gal) than gasoline (115,000 Btu/gal), meaning it requires three gallons of ethanol to displace two gallons of gasoline. As a result, motorists realize lower gas mileage using ethanol blended fuel, and the reduction in imported oil stemming from ethanol displacement of petroleum is less than it might appear.

E-10

EIA projections for 2017 predict gasoline use growing about 13% to 10.5 million barrels per day or the equivalent of 161 billion gallons. This compares to 2006 figures when gasoline consumption equaled 9.3 million barrels per day of 144 billion gallons a year. NPRA urges Congress to act with prudence before mandating E-10 nationwide. Consideration of potential economic, environmental, and logistical constraints should be

fully investigated and understood before embarking on such a far-reaching program. In order to achieve such a goal, every terminal in the nation (over 1500) would be required to install ethanol blending equipment—costs, potential permitting problems, and simple logistics would be a concern. Refiners would be required in many instances to provide a suitable blendstock for the ethanol so as to avoid environmental concerns. Massive increases in rail and local tanker truck deliveries would be required.

E-85

The current automotive fleet is engineered to use gasoline containing up to a maximum 10% ethanol. It is constrained by manufacturer's warrantees and regulations prohibiting fuel blends having a higher portion of ethanol. E-85 is an alcohol fuel mixture typically containing up to 85% ethanol and can be used in FFV's. E-85 also has a substantially lower energy content per gallon than gasoline (only about 70% of gasoline's energy content) which results in a substantial fuel economy penalty. In order for the retail consumer to cover the same distance they would using gasoline at same cost, the retail price of E-85 needs to be 25-30% lower than the price of gasoline. Not only does E-85 reduce fuel economy, but its availability at service stations is scarce, and E-85 is not compatible with fuel dispensing equipment at retail gasoline stations.

With only six million FFV's out of a nation pool of 237 million vehicles, very few vehicles on the road today can use gasoline blends containing more than 10% ethanol. This small percentage of vehicles capable of using the fuel, in addition to the energy content differential, limits demand for E-85. It should be noted, however, that NPRA does not oppose the expanded use of E-85 where appropriate. We merely oppose its mandated use and/or imposition of infrastructure development on the refining /marketing industry.

TECHNOLOGIC BREAKTHROUGHS

As previously stated, corn-based ethanol can provide only a fraction of the overall volumes required by the President's and other proposals. And again, it must be

questioned whether corn should play even this big a role in the program. However, NPRA is very concerned that massive programs based on the anticipated development of breakthrough technologies for cellulosic and other bio-fuels will present substantive problems. While NPRA supports government sponsored research and development that augments private enterprise research and development, we believe it prudent to wait until that or any particular technology is proven to be scientifically sound and economically justifiable at commercial scale. Requiring refiners and other obligated parties to commit to huge capital expenditures in the hopes that the technology will be forthcoming must be questioned.

In addition, any policies enacted by Congress to promote the development and use of biofuels should be process and feedstock neutral. The stated goal of reducing the nation's reliance on foreign sources of feedstock supply should not restrict any particular incentive to any one class of technologies, processes, or entities.

LOW CARBON FUELS

California Governor Schwarzenegger issued Executive Order S-01-07 (January 18, 2007) that requires the reduction of "carbon intensity" of transportation fuel sold in California by 10% by 2020. It requires capture of over half of CO_2 to return vehicles to 1990 levels and replace 20% of petroleum use. The standard applies to all refiners, blenders, producers or importers of transportation fuels, and may be met through "market-based methods". In addition, the order requires a full fuel cycle analysis requiring detailed examination of fuel/energy requirements beginning at resource extraction, initial processing, transport, refining, distribution and marketing and ending with vehicle operation and ultimate recycling.

NPRA does not oppose imposition of environmentally sound, economically justifiable regulations. And, as we have previously stated, we believe there is universal agreement that alternative fuels will continue to be a strong and growing component of the nation's transportation fuel mix. We further agree that technologic innovation advances will

continue to provide efficient mechanisms enabling the nation to diversify its transportation fuel and other energy related mixes. However, we must once again urge caution as the nation embarks on these and other programs.

A study by the University of California on the Low Carbon Fuel Standard has resulted in a few telling observations. "*Future improvements in ...methods may show that some technologies currently thought to reduce carbon intensity of fuels are in fact ineffective or even counter productive.*" This conclusion should give pause to proceeding headlong into depending on unknown technologies. The study further continues the admonition against moving quickly amidst these uncertainties. California could attain significant fuel supplies of low carbon biofuels, however the UC report further states: *"Attaining the high value would require massive shifting of crops in California."*

Other observations of note in the UC report include:

- *"Even after accounting for uncertainties and unknowns, it appears to be possible to ... [utilize] low-carbon fuel in CA"*
- *"Like all calculations in this study, these values are uncertain but indicate a likely order of magnitude"*
- *".... facilities to produce these fuels do not exist, some... feedstocks are not currently grown commerically, and many ... processes not commercially viable"*
- *"Achieving the 2020 and 2050 goals will not be easy. A central element will be technological innovation..."*

IMPOSITION OF STATE BIOFUEL MANDATES

The present enthusiasm for renewable fuels has resulted in several states and even municipalities adopting local mandates. Local mandates will impose additional strain on the ethanol distribution system and increase costs for shipping and storage. The existing federal Renewable Fuels Standard (RFS) mandate with its credit-trading provisions contains a degree of freedom that allows the distribution system to operate at a low-cost optimum by avoiding infrastructure bottlenecks (such as lack of storage or rail capacity).

Mandating ethanol usage in specific areas forces a distribution pattern that is less flexible, and therefore has less capability to minimize costs. These additional costs will be borne by consumers.

NPRA believes Congress should preempt local and state biofuel mandates and reinforce the efficacy of the federal RFS credit-trading system to ensure that the distribution system has the flexibility needed to minimize costs for the consumer.

NPRA appreciates the opportunity to present our views to the Subcommittee on these vital matters. We wish to work with all stakeholders in the spirit of implementing sound policies that achieve the desired results. I will be pleased to answer any questions that you may have.